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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,169	04/27/2005	Andrew David Bacon	Q85454	9237

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EXAMINER	
CHEN, SHIN LIN	

ART UNIT	PAPER NUMBER
1632	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/520,169	BACON ET AL.	
	Examiner	Art Unit	
	Shin-Lin Chen	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 15-26* is/are pending in the application.

4a) Of the above claim(s) *1-12 and 17-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13,15,16,25 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4-30-07 has been entered.

Applicants' amendment filed 4-30-07 has been entered. Claims 13 and 25 have been amended. Claim 14 has been canceled. Claim 26 has been added. Claims 1-13 and 15-26 are pending. Claims 13, 15, 16, 25 and 26 are under consideration.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13, 15, 16, 25 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "the antigenic protein and/or assistor protein" in claim 13 is vague and renders the claim indefinite. It is unclear whether the antigenic protein alone is intended and whether the assistor protein is intended or not. Changing the phrase to "the antigenic protein or the assistor protein or both" would be remedial.

The phrase "derived from" in claim 25 is vague and renders the claim indefinite. It is unclear as to the metes and bounds of what would be considered "derived from". It is unclear what kind of modification or no modification constitutes "derived from".

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 13, 15, 16, 25 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The phrase "the liposomes having an average diameter in the range of 100-1000nm" in claim 13 is considered new subject matter. Applicants point out that pages 19-20 of the specification provide support, however, the specification only provides a general large range but fails to specifically disclose the range 100 nm to 400 nm. The range 300 nm to 5000 nm does not include 100 nm to 300 nm, and the phrase "less than 2000 nm" appears to lead one skilled artisan to envision a specific diameter, such as 300 nm, rather than a range, such as 100-300 nm. The specification fails to provide specific range 100 nm to 400 nm and one skilled artisan would not be able to envision said range based on the disclosure of "300 nm to 5000 nm" and "less than

2000 nm". Thus, the phrase "the liposomes having an average diameter in the range of 100-1000nm" is considered new subject matter. Claims 15, 16, 25 and 26 depend from claim 13.

Applicants cite pages 19-20 of the specification and argue that the specification discloses range 300 nm to 5000 nm and less than 2000 nm, and the disclosed ranges overlap the range 100 nm to 400 nm (amendment, p. 7-8). This is not found persuasive because of the reasons set forth above under et U.S.C. 112, first paragraph, new matter rejection.

6. Claims 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of generating an immune response in a mammal by administering to the mammal a liposomal composition comprising a nucleic acid encoding an influenza HA antigenic protein and a whole inactivated influenza virus protein that shares at least one epitope with said antigenic protein via subcutaneous injection, wherein said method confers immunity against infection of the same type of influenza virus corresponding to said antigenic antigen, does not reasonably provide enablement for a method of generating an immune response in a mammal by administering to the mammal the liposomal composition as set forth above via various administration routes, wherein said method confers immunity against infection by any infectious virus, and a method of generating immune response involves stimulation of cytotoxic T-lymphocytes by using said liposomal composition. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Claims 15 and 16 are directed to a method of generating an immune response in a mammal by administering to the mammal a liposomal composition comprising a nucleic acid

and an assistor protein from an infectious microorganism, wherein said nucleic acid encodes an antigenic protein or portion thereof which shares at least one epitope with said antigenic protein and the liposomes have an average diameter in the range of 100-1000 nm, wherein the nucleic acid and the assistor protein are present in a weight ratio of 1000:1 or 1:1, and the immune response comprises an antibody response. Claim 15 specifies the immune response involves stimulation of cytotoxic T-lymphocytes. Claim 16 specifies the method confers immunity against infection by any infectious virus.

Enablement is considered in view of the Wands factors (MPEP 2164.01(a)). See also In re Wands, 858 F.2d at 737, 8 USPQ2d at 1404. The test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. In re Angstadt, 537 F.2d 498, 504, 190 USPQ 214, 219 (CCPA 1976). There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to: (A) The breadth of the claims; (B) The nature of the invention; (C) The state of the prior art; (D) The level of one of ordinary skill; (E) The level of predictability in the art; (F) The amount of direction provided by the inventor; (G) The existence of working examples; and (H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

The specification discloses preparation of a liposomal composition comprising p1.18/PR8-HA plasmid encoding full length HA from influenza A/Puerto Tico/8/34 and whole inactivated influenza A/Puerto Rico/8/34 virus protein, subcutaneous injection of said liposomal composition into female Balb/c mice at days 0 and 28, and said mice were challenged at day 57

with mouse adapted live influenza virus (A/Puerto Rico/8/34). The results show that co-delivery of both HA DNA and protein in the same liposomal formulation produces greater antibody immune response than non-liposomal delivery and control, and demonstrates a significant reduction in the % of animals infected with virus as compared to control (Example 3, p. 39-45). The specification also discloses that delivery of multi-strain DNAs and proteins in the same liposomal composition is highly effective in inducing antibody responses to the different strains present in the composition, which can be of the same level as that induced by delivering only DNA and protein of one single strain (Example 4, p. 45-51).

The claim encompasses using a liposomal composition comprising a nucleic acid encoding an antigenic protein and an assistor protein derived from any infectious microorganism, such as archaea, bacteria, protist, fungi and virus etc., to provide immunity to infection by any infectious virus, including double strand and single strand DNA viruses, and positive and negative strand RNA viruses, such as HIV viruses, via various administration routes. The specification fails to provide adequate guidance and evidence for how to provide immunity against numerous different infectious viruses by using nucleic acids and antigenic proteins from various infectious microorganisms, such as archaea, bacteria, protist, fungi and virus etc. The specification also fails to provide adequate guidance and evidence for how to provide immunity against numerous different infectious viruses by administering a liposomal composition comprising said nucleic acids and antigenic proteins to a mammal via various administration routes.

The state of the art of providing immunity against various infectious viruses was unpredictable at the time of the invention. McCluskie et al., 1999 (Molecular Medicine, Vol. 5,

p. 287-300) reports that "[r]oute of administration of plasmid DNA vaccines influences the strength and nature of immune responses in mice and non-human primates" and "anti-HBs were detected in plasma of mice treated by five of eight of the injected and none of the six noninjected routes (e.g. abstract, bridging p. 287-288, right column of p. 288). It appears that the route and method of a DNA vaccine delivery plays an important role in determining the resulting immune response from a host and optimization methods developed in mice may not necessarily be applicable to humans (e.g. right column, p. 288). McCluskie further points out that "[a] number of factors appear to influence the Th bias of the response, including (i) the antigen ... (ii) the dose of antigen ... (iii) whether the antigen is secreted, cytoplasmic, or membrane bound ... (iv) the route and method of DNA administration ... (v) the number of immunizations ... (vi) the presence of CpG motifs ... (vii) the haplotype of the mouse immunized ... (viii) the presence of adjuvant ... (ix) co-expression of cytokines ... (x) whether DNA is formulated ... and (xi) rest period between immunizations (e.g. p. 296, left column, second paragraph). The antigen itself, the route and method of administration, the number of administration, the type of target cells, the state of target cells, and the species of the animal (i.e. different type of host animal) all have significant impact on subsequent immune response in the host animal. The specification fails to provide specific guidance for how to use a bacterial, fungal or viral protein and nucleic acid to provide immunity against a non-corresponding infectious virus, for example, the targeted infectious virus doesn't even express the antigenic protein used for immunization. There is no evidence of record that cross-strain, cross-species or cross-organism immune response can provide immunity against a particular infectious virus.

Further, even providing immunity against HIV virus was unpredictable at the time of the invention. Potter et al., 2004 (Indian J Med Res, Vol. 119, pp. 217-237) points out that "mutations in human immunodeficiency virus type I (HIV-1) are a major impediment to successful highly active antiretroviral therapy (HAART) and the design of anti-HIV vaccines" and "drug resistance, drug toxicity, drug penetration, adherence to therapy, low levels of continued viral replication in cellular reservoirs and augmentation of host immune responses are some of the most important challenges that remain to be sorted out" (e.g. abstract). HIV is highly variable genetically because of the error-prone reverse transcriptase enzyme and rapid viral turnover and genetic recombination influences HIV-1 diversity. HIV isolates differ at nucleotide sequence level with even larger variation at the amino acid level. "HIV infection is also characterized by a high degree of genetic variability within infected persons, with the population present at a certain time point within an infected person consisting of a complex mixture of heterogeneous strains termed "quasispecies". Quasispecies generally differ in their antigenic and phenotypic properties and compete among themselves for survival and propagation. The subsequence overgrowth or dominance of a certain viral strain over another is largely determined by its relative adaptation to a given intra-host environment, a factor particularly relevant for the emergence of drug resistant variants" (e.g. p. 222, right column to p. 223, left column).

Further, Titti et al., 2007 (Expert Opin. Emerging Drugs, Vol. 12, No. 1, p. 23-48) states that it was very difficult to use vaccine against HIV infection despite almost 20 years of efforts and the search for an effective HIV vaccine still continues. "The wrong prediction was most likely dictated by the protective efficacy against challenge with pathogenic simian type D

retrovirus (SRV) obtained in rhesus monkeys following immunization with the whole inactivated virus or the SRV Env glycoprotein" (e.g. p. 23, background). The wrong prediction of easily available preventive vaccine against HIV appears to be due to the misleading result from simian type D retrovirus. The complexity of HIV infection and the importance of HIV accessory (nef) and regulatory (rev, tat) genes in the pathogenesis of AIDS contribute to the difficulty in HIV/AIDS vaccine development. These proteins can cause immune dysfunction and contribute importantly to AIDS pathogenesis (e.g. p. 23, background). Titti points out that "[i]n spite of a number of efforts to develop an effective vaccine against HIV/AIDS, there is still no clear evidence of how this should be accomplished. A major hurdle in the development of vaccines against HIV/AIDS is our lack of knowledge of the immune correlates of protection, the protective immune responses that must be elicited in order to prevent infection and/or disease onset. Without knowledge of the critical antigens or effective defense mechanisms, the strategies applied in vaccine development mostly rely on a "trial and error" approach and may be fundamentally flawed. One of the most critical challenges is the high genetic variability of HIV. As a result of errors generated by the reverse transcriptase and the lack of proof-reading functions associated with the polymerase, vast heterogeneity occurs throughout the viral genome with "hotspots" especially in glycoprotein (gp) 120" (e.g. p. 29, bridging left column, last paragraph to right column, first paragraph). It appears that no effective vaccine against HIV/AIDS has been developed so far because of the lack of knowledge of the critical antigens or effective defense mechanisms and the high HIV genetic heterogeneity. There is no evidence of record that shows the claimed composition comprising a nucleic acid and an assistor protein would be able to provide immunization against various HIV infections. In view of such, one

skilled in the art at the time of the invention would not know how to use the claimed composition of the instant invention to provide immunity against various infectious viruses via various administration routes so as to provide therapeutic effect in vivo.

In addition, claim 15 specifies the immune response involves stimulation of cytotoxic T-lymphocytes (CTL). The specification discloses that "[t]he immune system response assayed are restricted to antibody response and cellular mediated immune response (T helper, CTL etc) have not examined. Thus, equivalence in immune response to "cognate" and "irrelevant" DNA groups (Group 6.1 and 6.2) cannot be concluded" (p. 58, lines 8-13). It appears that it is unclear whether the claimed composition would be able to stimulate cell-mediated immune response, including CTL response. The specification fails to provide specific guidance for how to induce CTL response by using the claimed composition. There is no evidence of record that shows the claimed compositions comprising various nucleic acids and assistor proteins would be able to induce CTL response specific to the antigenic protein and/or assistor protein in various mammals. Absent such guidance, one skilled in the art at the time of the invention would not know how to induce CTL response with the claimed composition in various mammals.

For the reasons set forth above, one skilled in the art at the time of the invention would have to engage in undue experimentation to practice over the full scope of the invention claimed. This is particularly true based upon the nature of the claimed invention, the state of the art, the unpredictability found in the art, the teaching and working examples provided, the level of one of ordinary skill which is high, the amount of experimentation required, and the breadth of the claims.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 13, 15, 16, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craig, et al., 1997 (WO 97/28818) in view of Gregoriadis et al., 1999 (Methods, Vol. 19, p. 156-162, IDS).

Claims 13, 15, 16, 25 and 26 are directed to a method of generating an immune response in a mammal by administering to the mammal a liposomal composition comprising a nucleic acid and an assistor protein from an infectious microorganism, wherein said nucleic acid encodes an antigenic protein or portion thereof which shares at least one epitope with said antigenic protein and the liposomes have an average diameter in the range of 100-1000 nm, wherein the nucleic acid and the assistor protein are present in a weight ratio of 1000:1 or 1:1, and the immune response comprises an antibody response. Claim 15 specifies the immune response

involves stimulation of cytotoxic T-lymphocytes. Claim 16 specifies the method confers immunity against infection by any infectious virus. Claim 25 specifies the antigen protein is derived from Hepatitis virus. Claim 26 specifies the liposomes have an average diameter in the range of 100-400 nm.

Craig teaches administering a mixture to a mammal to elicit an immune response in said mammal, wherein the mixture includes a nucleic acid encoding a first epitope and a peptide containing a second epitope such that both of the nucleic acid and the second epitope are taken up by the antigen presenting cell of the mammal (e.g. abstract). Craig teaches that the first and second epitopes are preferably epitopes from the same antigen, and they may comprise the same immuno-dominant epitope from an infectious agents, such as the influenza virus (e.g. p. 4, lines 25-35, claims 24-30). Craig teaches "[i]n the simplest form, the peptide antigen and the nucleic acid encoded antigen described here are the same" (e.g. p. 17, lines 4-5). Craig teaches non-viral delivery means to deliver nucleic acid and an antigenic peptide or protein associated with nucleic acid to a mammal cell, wherein the non-viral delivery means include DNA/polycation complexes, self assembling virus like particles, and microsphere which are used for delivery of DNA or protein to cells, e.g. polyactide glycolide polymers, and **liposomes** (e.g. p. 12, lines 10-25). Craig teaches delivering a nucleic acid encoding an antigenic protein and a peptide antigen via liposome and states that "it is believed that a more effective immune response may be obtained using a first peptide antigen in combination with a second different nucleic acid-encoded antigen, or wherein several different peptide antigen are administered in combination with one or several different nucleic acid-encoded antigens. A "more effective" immune response will be evidence, as it relates to prior art vaccination procedures and compositions, as

two-fold and preferably a five-fold to ten-fold higher immune response, or by the finding that both a cellular and a humoral immune response is elicited by complexes or mixtures of the invention" (e.g. p. 17, lines 4-18). Craig further teaches the ratio of the nucleic acid encoding a first epitope to the amino acid sequence encoding the second epitope could be in the range of 1:10,000 to 1000:1 (e.g. p. 25, last paragraph).

Craig does not specifically teach the average diameter of the liposomes as recited in the claims.

Gregoriadis teaches that liposomes are carriers of peptide, protein and DNA vaccines. Gregoriadis teaches techniques that can generate liposomes of various sizes containing soluble antigens as well as antigen-encoding DNA vaccine (e.g. abstract). Gregoriadis also teaches that the average size of the liposome could be in the range from about 100 nm to several micrometers under conditions that preserve the activity of labile drugs (e.g. p. 158, left column). "The number of cycles used depends on the vesicle size required (Table 3) or the sensitivity of the entrapped vaccine (e.g. plasmid DNA) (e.g. p. 160, left column). In table 3, the average size of vaccine-containing DRV liposomes is from 101.9 nm in diameter to 473.9 nm in diameter.

It would have been obvious for one of ordinary skill in the art at the time of the invention to produce vaccine-containing liposomes with a diameter in the range of 100-1000 nm or 100-400 nm because Craig teaches using liposome for delivery of a vaccine composition containing both nucleic acid and antigenic protein and Gregoriadis teaches producing vaccine-containing DRV liposomes with a diameter in the range from 101.9 nm to 473.9 nm or from 100 nm to several micrometers, which overlaps with the recited range of 100-1000 nm or 100-400 nm of the instant invention.

One having ordinary skill in the art at the time the invention was made would have been motivated to do so in order to elicit an immune response in a mammal as taught by Craig or to preserve the activity of labile drugs and use liposome as carrier of vaccine as taught by Gregoriadis with reasonable expectation of success.

Applicants argue that Craig does not disclose weight ratio of nucleic acid to protein in the range of 1000:1 to 1:1 and the "stoichiontric" ratio taught by Craig is different from "weight" ratio and the ratio mentioned on lines 36-38 of page 25 do not appear to be weight ratios (amendment, p. 10). This is not found persuasive because of the reasons set forth above under 35 U.S.C. 103(a) rejection and that definition of "stoichiontric" is pertaining to stoichiometry, which means "determination of the relative quantities of the substances concerned in any chemical reaction...as in the molar proportions in a reaction. [G. stoicheion, 1 element + metron, 1 measure] (Stedman's Medical Dictionary 27th Edition). It is the relative quantities of the substances or elements in a chemical reaction, which can be measured in molar proportions. "Molar proportions" is one form of weight measurement. Further, whether there is a chemical reaction between the nucleic acid and protein is irrelevant and Craig does not teach that the nucleic acid and the protein in the "stoichiometric" ratio has to react to each other. Therefore, the ratio of the nucleic acid to the protein taught by Craig is weight ratio of nucleic acid to protein for preparing an immunization composition. The ratio of 1:1,000 to 100:1 overlaps with the recited ratio 1000:1 to 1:1.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shin-Lin Chen whose telephone number is (571) 272-0726. The examiner can normally be reached on Monday to Friday from 9:30 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras can be reached on (571) 272-4517. The fax phone number for this group is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

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Shin-Lin Chen, Ph.D.

SHIN-LIN CHEN
PRIMARY EXAMINER